SUPER●®

SUPER P4SBR
SUPER P4SBE

USER'S MANUAL

Revision 1.0c

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Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPER P4SBR/P4SBE motherboard. The SUPER P4SBR/P4SBE supports single Intel Pentium® 4, 1.50 - 2.40 GHz processors at a system bus speed of 400 MHz. Please refer to the support section of our web site (http://www.supermicro.com/TechSupport.htm) for a complete listing of supported processors.

Single 478-pin Pentium 4 processors are housed in a microFCPGA2 package.

Manual Organization

Chapter 1 includes a checklist of what should be included in your mainboard box, describes the features, specifications and performance of the SUPER P4SBR/P4SBE and gives detailed information about the chipset.

Chapter 2 begins with instructions on handling static-sensitive devices. Read this chapter when you want to install the processor and RIMM memory modules and when mounting the mainboard in the chassis. Also refer to this chapter to connect the floppy and hard disk drives, the IDE interfaces, the parallel and serial ports and the twisted wires for the power supply, the reset button, the keylock/power LED, the speaker and the keyboard.

If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for the video, the memory and the setup configuration stored in CMOS. For quick reference, a general FAQ (Frequently Asked Questions) section is provided. Instructions are also included for contacting technical support. In addition, you can visit our web site at www.supermicro.com/techsupport.htm for more detailed information.

Chapter 4 includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A provides AwardBIOS POST Codes.
Appendix B lists AwardBIOS POST Messages.
Appendix C lists AwardBIOS Error Beep Codes.

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Chapter 1: Introduction

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Chapter 3: Troubleshooting

Chapter 4: AwardBIOS

Appendices:

Chapter 1
Introduction

1-1   Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance.

Please check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

One (1) Supermicro Mainboard

One (1) ATA66/100 ribbon cable for IDE devices

One (1) floppy ribbon cable for (1) 5.25-inch floppy and (2) 3.5-inch floppy drives

One (1) Supermicro CD or diskettes containing drivers and utilities

One (1) CPU heatsink fan and clips (retail only)

One (1) User's/BIOS Manual

One (1) CPU heat sink bracket

One (1) USB cable with one port (retail only)

SCSI Accessories (P4SBR only)

One (1) 50-pin Ultra SCSI cable

One (1) 68-pin Ultra SCSI cable

One (1) set of SCSI driver diskettes

One (1) SCSI manual

1-4   Contacting Supermicro

Headquarters

Address:	SuperMicro Computer, Inc.
	980 Rock Ave.
	San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information)
	support@supermicro.com (Technical Support)
Web Site:	www.supermicro.com

Europe

Address:	SuperMicro Computer B.V.
	Het Sterrenbeeld 28, 5215 ML
	's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)

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Address:	SuperMicro, Taiwan
	4F, No. 232-1, Liancheng Rd.
	Chung-Ho 235, Taipei County
	Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
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Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	886-2-8228-1366, ext.132 or 139

Notes

SUPER P4SBR

Figure 1-1. SUPER P4SBR Image
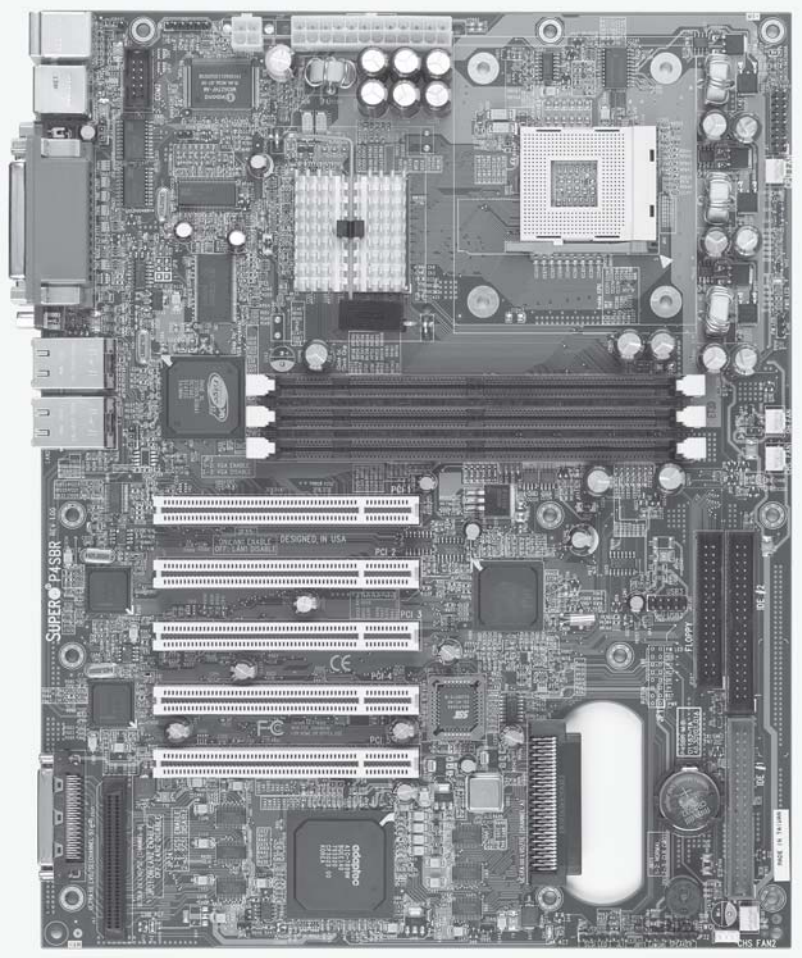
SUPER P4SBE

Figure 1-2.   SUPER P4SBE Image
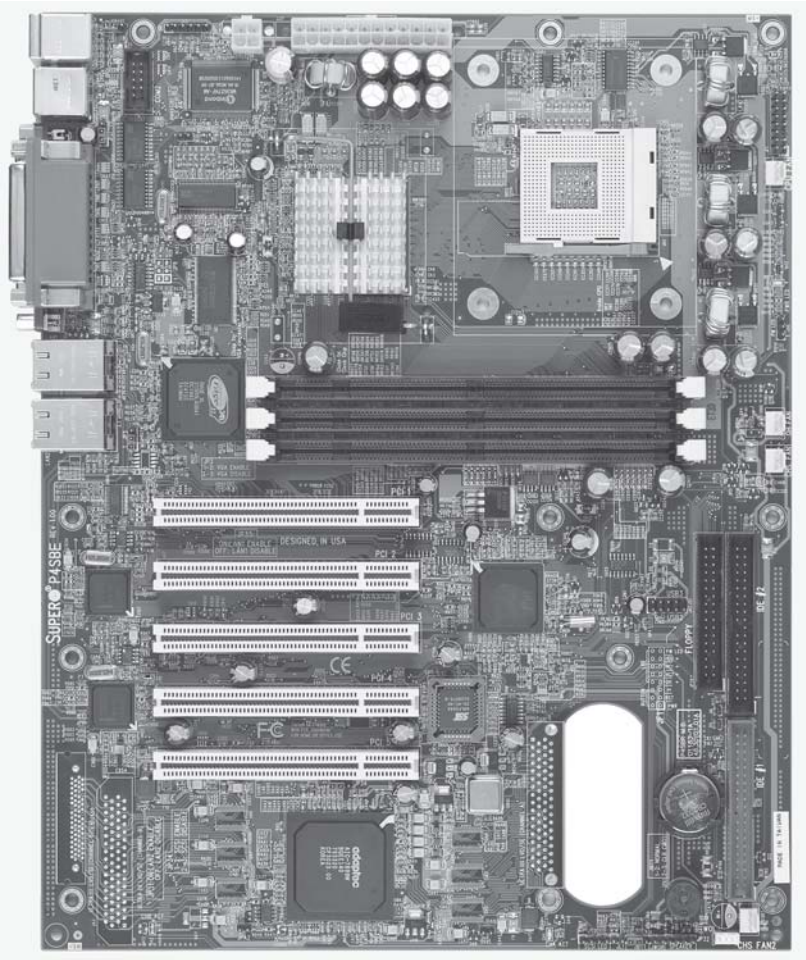
Figure 1-3. SUPER P4SBR Layout
(not drawn to scale)
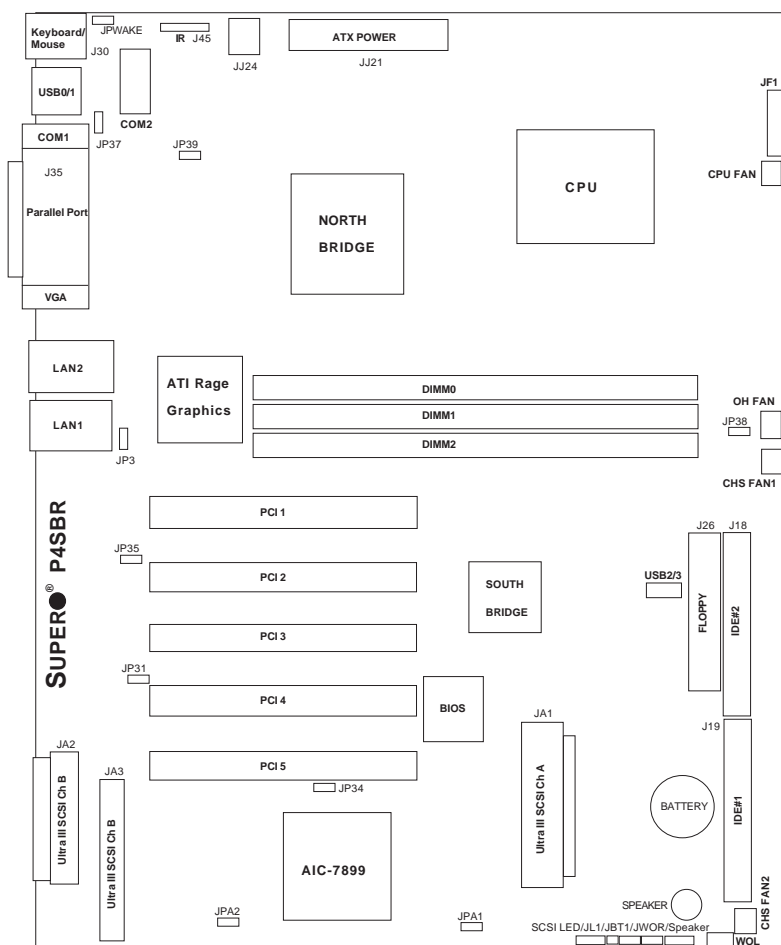
See chapter 2 for detailed information on jumpers, I/O ports and the JF1 Front Panel Connectors. Jumpers not indicated are for test purposes only.

P4SBR Quick Reference

Jumpers	Description	Default Setting
JBT1	CMOS Clear	Pins 1-2 (Normal)
JPA1	LVD SCSI Ch A Term	Open (Enabled)
JPA2	LVD SCSI Ch B Term	Open (Enabled)
JP3	VGA Enable/Disable	Pins 1-2 (Enabled)
JP31	LAN2 Enable/Disable	Closed (Enabled)
JP34	SCSI Enable/Disable	Pins 1-2 (Enabled)
JP35	LAN1 Enable/Disable	Closed (Enabled)
JP37	USB Wakeup	Pins 1-2 (Disabled)
JP38	OH Fan On/Standby	Open (Standby)
JP39	Watch Dog En/Disable	Open (Disabled)
JPWAKE	Keyboard Wake-Up	Pins 1-2 (Disabled)

Connectors	Description
COM1/COM2	COM1/COM2 Serial Port Connector
CHS Fan 1/2	Chassis Fan Headers
CPU FAN	CPU Fan Header
DIMM0/1/2	Memory (DIMM) Slots
JA1	Ultra III LVD SCSI Channel A
JA2	Ultra III LVD SCSI Channel B
JA3	Ultra III LVD SCSI Channel B
JF1	Front Control Panel
JJ21	ATX 12V Power Connector (20-pin)
JJ24	ATX 12V Power Connector (4-pin)
JL1	Chassis Intrusion Header
JP26	Floppy Disk Drive Connector
JWOR	Wake-On-Ring Header
J18, J19	IDE Hard Disk Drive Connectors
J30	PS/2 Keyboard/Mouse
J35	Parallel Printer Port
J45	Infrared Device Header
OH Fan	Thermal Control (Overheat) Fan Header
SCSI LED	SCSI Activity LED Indicator
Speaker	External Speaker Header
USB0/1	Universal Serial Bus Ports #0 / #1
USB2/3	Universal Serial Bus Port #2 / #3
WOL	Wake-On-LAN

Note: The 4-pin connector at JJ24 must be connected to meet the safety requirements of the ATX 12V specifications.

Figure 1-4. SUPER P4SBE Layout
(not drawn to scale)
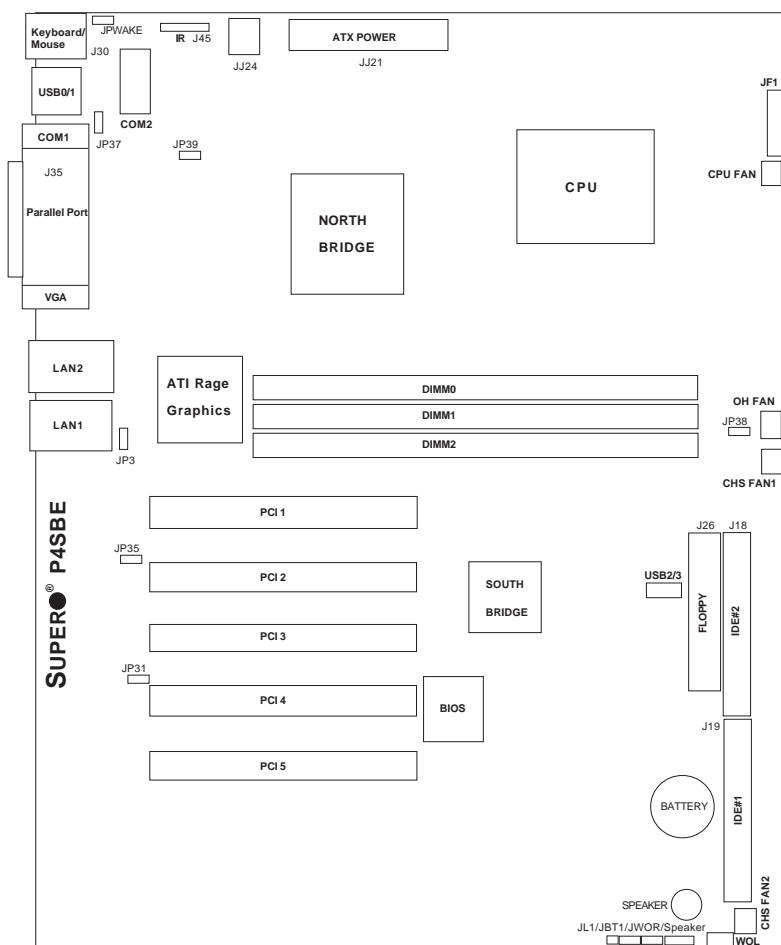
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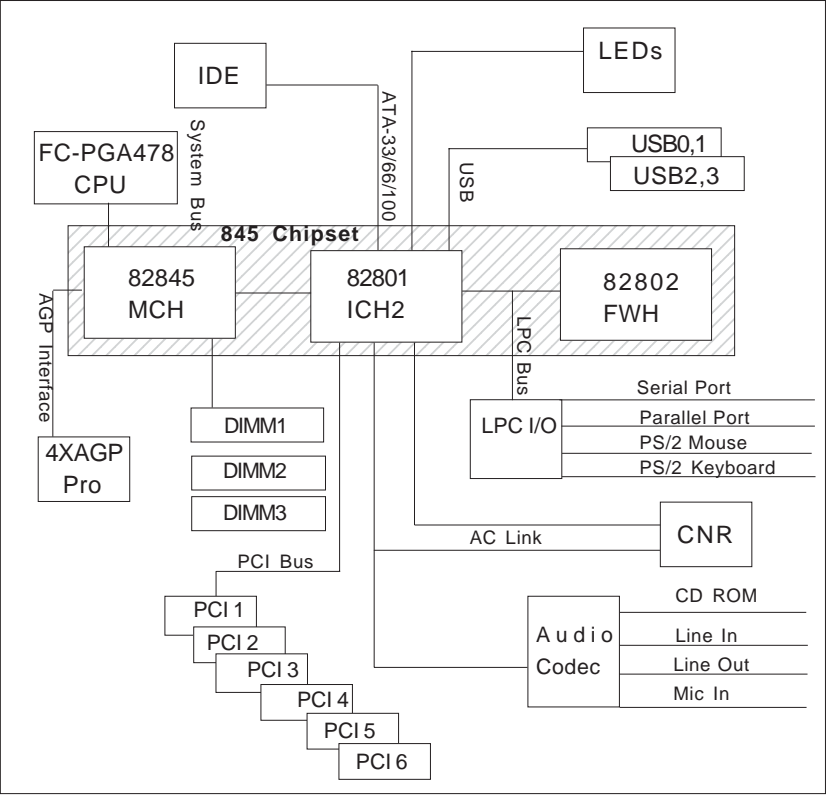
**Figure 1-5. 845 Chipset:
System Block Diagram**

Note: This is a general block diagram and may not exactly represent the features on your motherboard. See the following pages for the actual specifications of each motherboard.

Motherboard Features

CPU
• Single Intel Pentium® 4 478-pin micro FCPGA 1.50 to 2.40 GHz processors at a 400 MHz system bus speed
Note: please refer to the support setion of our website for a complete listing of supported processors (http://www.supermicro.com/TechSupport.htm).

Memory
• Three 168-pin DIMMs for up to 3 GB unbuffered PC133/100 SDRAM. Error Checking & Correction and Parity Checking are fully supported.

Chipset
• Intel 845 Chipset

Expansion Slots
• Five 32-bit, 33MHz PCI slots

BIOS
• 4 Mb Firmware Hub AwardBIOS® Flash BIOS
• APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0, Plug and Play (PnP)

PC Health Monitoring
• Seven onboard voltage monitors for CPU core, chipset voltage, +3.3V, +5V and ±12V
• Three-fan status monitor with firmware/software on/off control
• Environmental temperature monitoring and control
• CPU fan auto-off in sleep mode
• Power-up mode control for recovery from AC power loss
• System overheat LED and control
• System resource alert
• Hardware BIOS virus protection
• Auto-switching voltage regulator for the CPU core

ACPI/PC98 Features
• Microsoft OnNow
• Slow blinking LED for suspend state indicator
• BIOS support for USB keyboard
• Real-time clock wake-up alarm
• Main switch override mechanism

- External modem ring-on

Onboard I/O
- AIC-7899 for dual channel Ultra160 SCSI (P4SBR only)
- Intel 82559 for dual 10/100 LAN ports
- ATI Rage XL 8 MB PCI graphics controller
- Dual Ultra DMA100 IDE Bus Master
- 1 floppy port interface (up to 2.88 MB)
- 2 Fast UART 16550A compatible serial ports
- 1 EPP (Enhanced Parallel Port) and ECP (Extended Capabilities Port) supported parallel port
- PS/2 mouse and PS/2 keyboard ports
- Up to 4 USB (Universal Serial Bus) ports
- VGA port
- Infrared port

Other
- Internal/external modem ring-on
- Recovery from AC power loss control
- Wake-on-LAN (WOL)
- Multiple CPU clock frequency ratio selections (set in BIOS)

CD Utilities
- BIOS flash upgrade utility
- Drivers for 845 chipset utilities

Dimensions
- P4SBR: ATX, 12" x 9.6" (305 x 244 mm)
- P4SBE: ATX, 12" x 9.6" (305 x 244 mm)

1-2 Chipset Overview

Intel's 845 chipset is made up of three main components:

The 82845 Memory Controller Hub (MCH) with an Accelerated Hub Architecture (AHA) bus.

The 82801 BA I/O Controller Hub (ICH2) with an AHA bus.

The 82802 AB Firmware Hub (FWH).

Memory Controller Hub (MCH)

The MCH includes the host (CPU) interface, SDRAM interface, ICH2 interface and 4xAGP interface for the 845 chipset. It contains advanced power management logic and supports three DIMMS for up to 3 GB of unbuffered SDRAM. The AGP 2.0 interface supports 4x data transfers and operates at a peak bandwidth of 1056 GB. The MCH host interface bus runs at 400 MHz.

I/O Controller Hub (ICH2)

The I/O Controller Hub (ICH2) subsystem on the P4SBR/P4SBE integrates many of the input/output functions of the 845 chipset, including a dual channel ATA-33/66/100 Bus Master IDE controller and two USB controllers that offer 24 Mbps of bandwidth across four ports. It also provides the interface to the PCI Bus and communicates with the MCH over a dedicated hub interface bus -- the AHA. The ICH2 also features an enhanced AC97 interface that supports full surround sound for the Dolby Digital Audio used on DVDs.

Firmware Hub (FWH)

The FWH is a component that brings added security and manageability to the PC platform infrastructure. This device includes an integrated Random Number Generator (RNG) for stronger encryption, digital signing and security protocols. The FWH stores the system BIOS and video BIOS to eliminate a redundant nonvolatile memory component.

Recovery from AC Power Loss

The BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power on state. See the Power Lost Control setting in the BIOS chapter of this manual to change this setting. The default setting is Always OFF.

1-3 PC Health Monitoring

This section describes the PC health monitoring features of the SUPER P4SBR/P4SBE. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

Onboard Voltage Monitors for the CPU Core, Chipset Voltage, +3.3V, +5V and ±12V

The onboard voltage monitor will scan these voltages continuously. Once a voltage becomes unstable, it will give a warning or send an error message to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Three Fan Status Monitor with Firmware/Software On/Off Control

The PC health monitor can check the tachometer (RPM) status of the CPU and two chassis fans. The onboard 3-pin CPU and chassis fans are controlled by the power management functions. The thermal fan is controlled by the overheat detection logic.

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. It can continue to monitor for overheat conditions even when the CPU is in sleep mode. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal control fan to prevent any overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

CPU Overheat LED and Control

This feature is available when the user enables the CPU overheat warning function in the BIOS. This allows the user to define an overheat temperature. When this temperature is exceeded, both the overheat fan and the warning LED are turned on.

System Resource Alert

This feature is available when used with Intel's LANDesk Client Manager (optional). It is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem.

Hardware BIOS Virus Protection

The system BIOS is protected by hardware so that no virus can infect the BIOS area. The user can only change the BIOS content through the flash utility provided by Supermicro. This feature can prevent viruses from infecting the BIOS area and destroying valuable data.

Auto-Switching Voltage Regulator for the CPU Core

The 3-phase-switching voltage regulator for the CPU core can support up to 60A current and auto-sense voltage IDs ranging from 1.1V to 1.85V. This will allow the regulator to run cooler and thus make the system more stable.

1-4 ACPI/PC99 Features

ACPI is an acronym for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers automatically. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with both Windows 98/2000 and Windows NT 4.0. **Note:** To utilize ACPI, you must reinstall Windows 98. To reinstall Windows 98 with ACPI, enter DOS and type "setup /p J" at the CDROM prompt (usually D:\) with the Windows 98 CD loaded. (Make sure you include the spaces after "setup" and "p".) Then press <Enter>. You can check to see if ACPI has been properly installed by looking for it in the Device Manager, which is located in the Control Panel in Windows.

Microsoft OnNow

The OnNow design initiative is a comprehensive, system-wide approach to system and device power control. OnNow is a term for a PC that is always on but appears to be off and responds immediately to user or other requests.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

BIOS Support for USB Keyboard

If the USB keyboard is the only keyboard in the system, it keyboard will function like a normal keyboard during system boot-up.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

BIOS Support for USB Keyboard

If the USB keyboard is the only keyboard in the system, it keyboard will function like a normal keyboard during system boot-up.

Real Time Clock Wake-Up Alarm

Although the PC may be perceived to be off when not in use, it is still capable of responding to preset wake-up events. In the BIOS, the user can set a timer to wake-up the system at a predetermined time.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button. When the user depresses the power button, the system will enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Depressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just depress and hold the power button for 4 seconds. The power will turn off and no power will be provided to the motherboard.

Suspend to RAM (STR)

All tasks are stored in RAM and can be resumed within seconds from the suspend mode. This can save you time by avoiding the need to shutdown and reboot your system during idle periods. The S3 suspend mode is that in which the PC's power consumption is the lowest possible while maintaining the system context in memory.

Wake-On-LAN (WOL)

Wake-On-LAN is defined as the ability of a management application to re-motely power up a computer that is powered off. Remote PC setup, up-dates and asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboards have a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. Wake-On-LAN must be enabled in BIOS. Note that Wake-On-Lan can only be used with an ATX 2.01 (or above) compliant power supply.

1-5   Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates of 1.4+ GHz.

The SUPER P4SBR/P4SBE accommodates ATX 12V power supplies. Al-though most power supplies generally meet the specifications required by the CPU, some are inadequate.

It is strongly recommended that you use a high quality power supply that meets ATX 12V power supply Specification 1.1 or above. Additionally, in areas where noisy power transmission is present, you may choose to in-stall a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1-6   Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selec-tion, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports four 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s.

It also provides two high-speed, 16550 compatible serial communication ports (UARTs), one of which supports serial infrared communication. Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through a SMI or SCI function pin. It also features auto power management to reduce power consumption.

The IRQs, DMAs and I/O space resources of the Super I/O can be flexibly adjusted to meet ISA PnP requirements, which suppport ACPI and APM (Advanced Power Management).

Notes

Chapter 2
Installation

2-1   Static-Sensitive Devices

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

• Use a grounded wrist strap designed to prevent static discharge.
• Touch a grounded metal object before removing the board from the anti-static bag.
• Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
• When handling chips or modules, avoid touching their pins.
• Put the motherboard and peripherals back into their antistatic bags when not in use.
• For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Installation Procedures

Follow the procedures below for the installation of the motherboard and the system:

1. Installing the processor and the heat sink.

2. Installing the motherboard in the chassis.

3. Installing the memory and add-on cards.

4. Finally, installing the cables and drivers.

2-2   Processor and Heatsink Fan Installation

!

When handling the processor package, avoid placing direct pressure on the label area of the fan.

IMPORTANT: Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

Installation of the Processor and Heatsink

1. Locate the following components, which are included in the shipping package.

Clips (2)

Bracket (1)

Note: The CPU heatsink fan and clips are included only with the retail versions of the P4SBR and P4SBE. If you buy a boxed Intel Pentium 4 478/ Northwood processor it should include a heatsink, fan and retention mechanism. If you buy a processor separately, use only a Supermicro or Intel certified heatsink and fan.

2. Insert the white pegs into the black anchors. Do not force the white pegs all the way in - about 1/3 of the white pegs should be inside the black anchors. (These are for chassis that do not have four CPU retention holes.)

Bracket in position
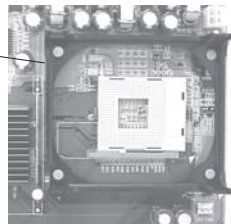
3. Place a retention bracket in the proper position and secure it by pressing two pegs into the retention holes until you hear a *click*. The clicking sound indicates that the peg is locked and secured.

4. Secure the other retention bracket into position by repeating Step 3.

5. Lift the lever on the CPU socket.
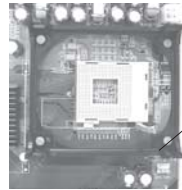
Socket Lever
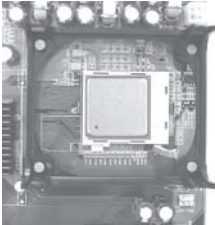
6. Install the CPU in the socket. Make sure that Pin 1 of the CPU is seated on Pin 1 of the socket (both corners are marked with a triangle).

7. Press the lever down until you hear it *click* into the locked position.

Socket lever in locked position
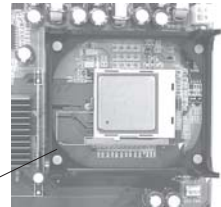
8. Apply the proper amount of thermal compound to the CPU die.

9. Place the heatsink on top of the CPU and press firmly downward - do not twist or slide the heatsink to seat thermal compound.

10. Secure the heatsink by locking the retention clips into their proper position.
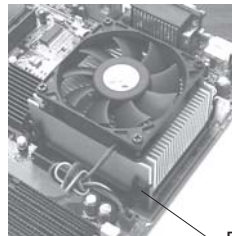
Retainer clip attachment point

11. Connect the cord of CPU fan to the proper CPU fan connector.
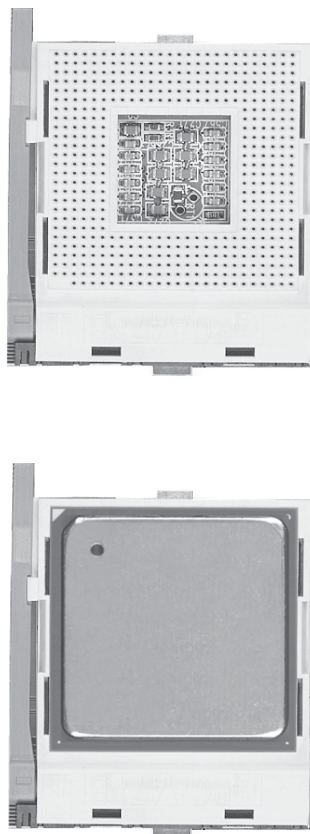
Figure 2-1. 478-Pin FCPGA Socket: Empty and with Processor Installed

2-3   Mounting the Motherboard in the Chassis

All motherboards have standard mounting holes to fit different types of chassis.   Chassis may include a variety of mounting fasteners made of metal or plastic.

2-4   Installing DIMMs

CAUTION
Exercise extreme care when installing or removing DIMM
modules to prevent any possible damage.

Memory Module Installation (See Figure 2-2)

1.   Insert each memory module vertically into a DIMM slot. Pay attention
to the two notches along the bottom of the module to prevent
inserting the module incorrectly.
2.   Gently press down on the memory module until it snaps into place.
3.   Three PC 133 SDRAM sockets support up to 3 GB PC133/PC100
unbuffered SDRAM. ECC type memory is supported. PC133 and
PC100 memory are both fully supported at their respective speeds.

Figure 2-2. DIMM Installation/Removal

To Install:
Insert module
vertically and
press down
until it snaps
into place.
Pay attention
to the two
notches.

Notch → DIMM ← Notch

Release
Tab

*Note: Notch
should align
with the
receptive point
on the slot*
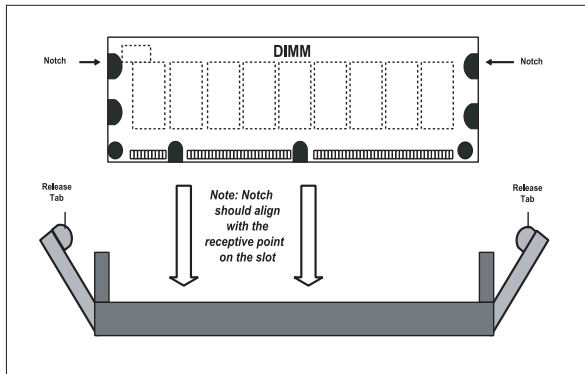
Release
Tab

To Remove:
Use your
thumbs gently
to push each
release tab
outward to
release the
DIMM from
the slot.

Top View of DIMM Slot

Release Tab

Release Tab
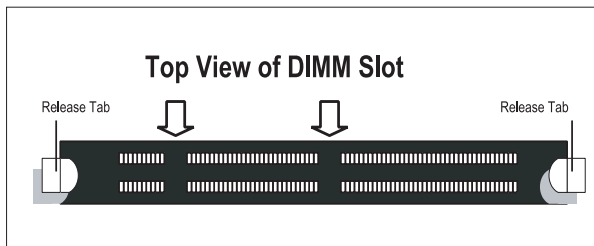
2-5 I/O Port/Control Panel Connector Locations

The I/O ports are color coded in conformance with the PC99 specification to make setting up your system easier. See Figure 2-3 below for the colors and locations of the various I/O ports.

Figure 2-3. I/O Port Locations and Definitions

Mouse
(Green)

Parallel Port
(Burgundy)

Keyboard   USB0/1   COM1 Port   VGA Port   LAN2   LAN1
(Purple)   Ports   (Turquoise)   (Blue)
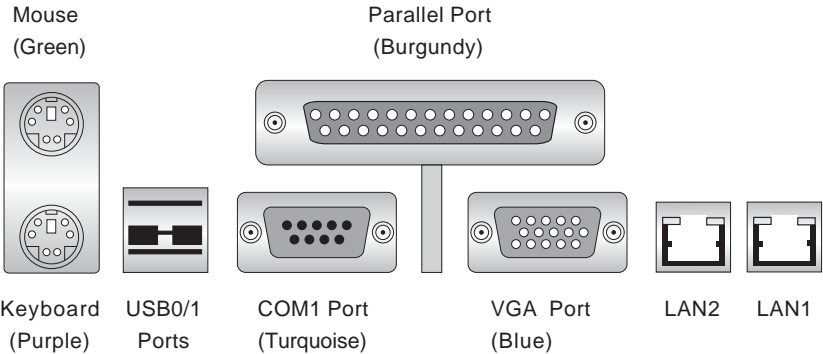
Front Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 2-4 for the pin definitions of the Power and Reset buttons and the Overheat, NIC1, NIC2, HDD and Power LEDs, which are all located on JF1. Refer to the following section for more details.

Figure 2-4. Front Control Panel Connectors

	16	15		
Control	○	○	5V	Power LED
Control	○	○	5V	HDD LED
Control	○	○	3V	NIC1 LED
Control	○	○	3V	NIC2 LED
Control	○	○	5V	Overheat LED
	○	○		X
Ground	○	○	Reset	Reset Button
Ground	○	○	Pwr	Power Button
	2	1		
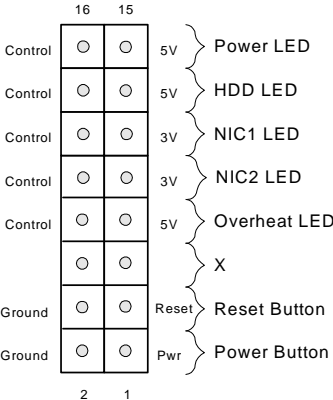
2-6   Connecting Cables (see previous page for locations)

Power Supply Connector

The primary power supply con-
nector on the P4SBR/P4SBE
meets the SSI (Superset ATX)
24-pin specifications; however, it
also supports an ATX 20-pin
connector. Thus, both 20-pin
ATX and 24-pin SSI connectors
can be used as long as it is cor-
rectly oriented. (Make sure that
pin 1 of the PS connector is
seated on pin 1 of the JJ21
header.) See the tables on the
right for the pin definitions of
both types. Refer to Figure A
below for a 24-pin connector ori-
entation and Figure B for a 20-
pin connector orientation. Also
see the table below right for JJ24
(12V connector) pin definitions.

ATX Power Supply 24-pin Connector
Pin Definitions (JJ21)

Pin Number	Definition	Pin Number	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON#	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res(NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

ATX Power Supply 20-pin Connector

Pin Number	Definitio	Pin #	Definition
11	+3.3V	1	+3.3V
12	-12V	2	+3.3V
13	COM	3	COM
14	PS_ON	4	+5V
15	COM	5	COM
16	COM	6	+5V
17	COM	7	COM
18	-5V	8	PW-OK
19	+5V	9	5VSB
20	+5V	10	+12V

Pin 24   Pin 13

Pin 12   Pin 1

(Figure A: 24-pin connection)

ATX Power Supply
4-pin Connector
(JJ24)

required
connection

Pins #	Definition
1 & 2	Ground
3 & 4	+12 V

Pin 20   Pin 11

Pin 10   Pin 1
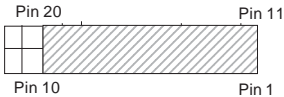
(Figure B: 20-pin connection)

PWR Supply
Color Definitions

Color	Definition
Orange	+3.3V
Black	Com
Red	5V
White	Power OK
Yellow	+12V
Purple	5V standby
Brown	-5V
(For reference only)	

Power Button

The Power Button connector is lo-
cated on pins 1 and 2 of JF1. Mo-
mentarily contacting both pins will
power on/off the system. The
user can also configure this but-
ton to function as a suspend but-
ton. (See the Power Button Mode
setting in BIOS.) To turn off the
power when set to suspend mode,
hold down the power button for at
least 4 seconds. See the table on
the right for pin definitions.

**Power Button
Pin Definitions
(JF1)**

Pin Number	Definition
1	PW_ON
2	Ground

Reset Button

The Reset Button is located on
pins 3 and 4 of JF1. This connec-
tor attaches to the hardware reset
switch on the computer case.
See the table on the right for pin
definitions.

**Reset Pin
Definitions
(JF1)**

Pin Number	Definition
3	Ground
4	Reset

Overheat LED (OH)

Connect an LED to the OH connec-
tion on pins 7 and 8 of JF1 to pro-
vide advanced warning of chassis
overheating. Refer to the table on
the right for pin definitions.

**Overheat (OH) LED
Pin Definitions
(JF1)**

Pin Number	Definition
7	+5V
8	GND

NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF1. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)

Pin Number	Definition
9	+5V
10	GND

NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)

Pin Number	Definition
11	+5V
12	GND

HDD LED

The HDD LED (for IDE Hard Disk Drives) connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to these pins to display disk activity. Refer to the table on the right for pin definitions.

(IDE) HDD LED Pin Definitions (JF1)

Pin Number	Definition
13	+5V
14	HD Active

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

PWR_LED Pin Definitions (JF1)

Pin Number	Definition
15	+5V
16	Control

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J30. Refer to the table on the right for pin definitions. (The mouse port is above the keyboard port. See Figure 2-3 for locations.)

PS/2 Keyboard and Mouse Port Pin Definitions (J30)

Pin Number	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Universal Serial Bus (USB)

Two Universal Serial Bus ports (USB0 and USB1) are located on the I/O backplane. Refer to the table on the right for pin definitions.

Universal Serial Bus Pin Definitions

USB0		USB1	
Pin Number	Definition	Pin Number	Definition
1	+5V	1	+5V
2	P0-	2	P0-
3	P0+	3	P0+
4	Ground	4	Ground
5	N/A	5	Key

Extra Universal Serial Bus Connection (USB2/3)

The P4SBR/P4SBE also provides two additional USB headers; USB2 and USB3 are headers located near the floppy connnection and provide easy front side chassis access (cables are not included). Refer to the table on the right for pin definitions.

USB2 Pin Definitions (J43)

Pin Number	Definition
1	Power
2	-
3	+
4	Ground

USB3 Pin Definitions (J51)

Pin Number	Definition
1	Power
2	-
3	+
4	Ground

Serial Ports

The COM1 serial port is located under the parallel port (see Figure 2-3). See the table on the right for pin definitions. The COM2 connector is a header located behind the USB ports.

(Note: NC indicates no connection.)

Serial Port Pin Definitions (COM1, COM2)

Pin Number	Definition	Pin Number	Definition
1	DCD	6	CTS
2	DSR	7	DTR
3	Serial In	8	RI
4	RTS	9	Ground
5	Serial Out	10	NC

LAN1/LAN2 Ports

Two Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables. Two LEDs on each indicate a successful connection (yellow) and activity (green).

RJ45 Ethernet Port

Infrared Connector

The infrared connector is located at J45. See the table on the right for pin definitions. Refer to the Technical Support section of our web page for information on the infrared devices you can connect to the system.

Infrared Pin Definitions (J45)

Pin Number	Definition
1	+5V
2	CIRRX
3	IRRX
4	Ground
5	IRTX
6	NC

Fan Headers

The motherboard has CPU, chassis and overheat fan headers designated CPU, CHS F1, CHS FAN2 and OH FAN, respectively. See the table on the right for pin definitions.

Fan Header Pin Definitions (CPU/CHS/OH Fans)

Pin Number	Definition
1	Ground (black)
2	+12V (red)
3	Tachometer

Caution: These fan headers are DC power.

Wake-On-LAN

The Wake-On-LAN header is designated as "WOL". Refer to the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this function. (You must also have a LAN card with a Wake-on-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions (WOL)

Pin Number	Definition
1	+5V Standby
2	Ground
3	Wake-up

SCSI LED Indicator (P4SBR only)

The SCSI LED connector is used to provide an LED indication of SCSI activity. See the table on the right for pin definitions.

SCSI LED Pin Definitions (SCSI LED)

Pin Number	Definition
1	Positive
2	Negative
3	Negative
4	Positive

PWR LED

Attach an LED to the Power LED connection to be informed that power is being supplied to the motherboard. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (PWR LED)

Pin Number	Definition
1	+5V
2	Control
3	Control

Wake-On-Ring

The Wake-On-Ring header is designated as "JWOR". This function allows your computer to receive and be "awakened" by an incoming call when in the suspend state. See the table on the right for pin definitions. You must also have a WOR card and cable to use WOR.

Wake-On-Ring Pin Definitions (JWOR)

Pin Number	Definition
1	Ground
2	Wake-up

Chassis Intrusion

The Chassis Intrusion header is located on JL1. See the table on the right for pin definitions.

Chassis Intrusion Pin Definitions (JL1)

Pin Number	Definition
1	Intrusion Input
2	Ground

Speaker

A header for an external speaker is located near JWOR. If using the onboard speaker, pins 1 and 2 should be closed with a jumper. If you wish to use an external speaker, you may connect it to this header. See the table on the right for pin definitions.

Speaker Connector Pin Definitions (Speaker)

Pin Number	Function	Definition
1	+	Red wire, Speaker data
2	Key	No connection
3		Key
4		Speaker data

2-7   Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.
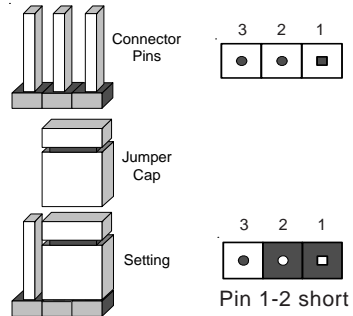
Note: on 2-pin jumpers, "Closed" means the jumper is on both pins and "Open" means the jumper is either on one pin only or completely off.

Connector Pins

3   2   1

Jumper Cap

3   2   1

Setting

Pin 1-2 short

CMOS Clear

Refer to the table on the right for instructions on how to clear CMOS. Always remove the AC power cord from the system before clearing CMOS.

Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord, then use JBT1 to clear CMOS. Replace JBT1 back to the pin 1-2 position before powering up the system again. Do not use the PW_ON connector to clear CMOS.

CMOS Clear Jumper Settings (JBT1)

Jumper Position	Definition
1-2	Normal
2-3	CMOS Clear

Position 1-2

Normal

Position 2-3

CMOS Clear

USB Wake-Up

Jumper JP37 is used in conjunction with the Keyboard Wake-Up function in BIOS to wake the system up with a USB keyboard that has been connected to a USB port (not header). Set JP37 to pins 1-2 to support USB keyboard wake-up and resume from ACPI S1 mode and pins 2-3 pins to support USB keyboard wake-up and resume from ACPI S3 mode. See the table on the right for jumper settings.
Note: Your power supply must provide 5v of standby voltage with at least 1A to use this feature.

**USB Wake-Up
Jumper Settings (JP37)**

Jumper Position	Definition
1-2	5v
2-3	5v Standby

SCSI Termination (P4SBR only)

The SCSI termination jumpers allow you to enable or disable termination for the onboard SCSI connectors. The normal (default) position is open to enable SCSI termination. See the table on the right for jumper settings.

**SCSI Termination
Jumper Settings
(JPA1, JPA2)**

Jumper Position	Definition
Open	Enabled
Closed	Disabled

SCSI Enable/Disable (P4SBR only)

Use jumper JP34 to enable or disable the onboard SCSI on your motherboard. See the table on the right for jumper settings.

**SCSI Enable/Disable
Jumper Settings (JP34)**

Jumper Position	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

LAN1/LAN2

Use jumper JP35/JP31 to enable or disable LAN 1/LAN 2, respectively. See the table on the right for jumper settings.

**LAN1/2 Enable/Disable
Jumper Settings
(J35, J31)**

Jumper Position	Definition
Open	Disabled
Closed	Enabled

Overheat Fan Enable/Disable

JP38 allows you to enable or disable the overheat (thermal) fan. When enabled, the fan will operate continuously. When disabled, it will operate only when a predefined temperature threshold has been exceeded. See the table on the right for jumper settings.

Thermal Fan Enable/Disable Jumper Settings (JP38)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

Watchdog Enable/Disable

Jumper JP39 allows you to enable or disable the Watchdog feature. The normal (default) position is closed to disable the watchdog timer and enable the speaker. See the table on the right for jumper settings.

Watchdog Enable/Disable Jumper Settings (JP39)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

Keyboard Wake-Up

The JPWAKE jumper is used together with the Keyboard Wake-Up function in BIOS. Enable both the jumper and the BIOS setting to allow the system to be woken up by depressing a key on the keyboard. See the table on the right for jumper settings.
Note: Your power supply must meet ATX specification 2.01 or higher and supply 720mA of standby power to use this feature.

Keyboard Wake-Up Jumper Settings (JPWAKE)

Jumper Position	Definition
1-2	Disabled
2-3	Enabled

2-8 Parallel Port, Floppy/Hard Drive and SCSI Connections

Use the following information to connect the floppy and hard disk drive cables.

- The floppy disk drive cable has seven twisted wires.

- A red mark on a wire typically designates the location of pin 1.

- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

- The 80-wire ATA66/100 IDE hard disk drive cable that came with your system has two connectors to support two drives. This special cable should be used to take advantage of the speed this new technology offers. The blue connector connects to the onboard IDE connector interface and the other connector(s) to your hard drive(s). Consult the documentation that came with your disk drive for details on actual jumper locations and settings for the hard disk drive.

Parallel Port Connector

The parallel port is located on J35.
See the table on the right for pin definitions.

Parallel (Printer) Port Pin Definitions (J35)

Pin Number	Function	Pin Number	Function
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Floppy Connector

The floppy connector is located on JP26. See the table on the right for pin definitions.

Floppy Connector Pin Definitions (JP26)

Pin Number	Function	Pin Number	Function
1	GND	2	FDHDIN
3	GND	4	Reserved
5	Key	6	FDEDIN
7	GND	8	Index-
9	GND	10	Motor Enable
11	GND	12	Drive Select B-
13	GND	14	Drive Select A-
15	GND	16	Motor Enable
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	Write Data-
23	GND	24	Write Gate-
25	GND	26	Track 00-
27	GND	28	Write Protect-
29	GND	30	Read Data-
31	GND	32	Side 1 Select-
33	GND	34	Diskette

IDE Connectors

There are no jumpers to configure the onboard IDE interfaces J18 and J19. See the table on the right for pin definitions. You must use the ATA100/66 cable included with your system to benefit from the ATA100/66 technology.

IDE Connector Pin Definitions (J18, J19)

| Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

Ultra160 SCSI Connectors

Refer to the table below for the pin definitions of the Ul-tra160 SCSI connectors located at JA1, JA2 and JA3.

68-pin Ultra160 SCSI Connectors (JA1, JA2, JA3)

Connector Contact Number	Signal Names	Connector Contact Number	Signal Names
1	+DB(12)	35	-DB(12)
2	+DB(13)	36	-DB(13)
3	+DB(14)	37	-DB(14)
4	+DB(15)	38	-DB(15)
5	+DB(P1)	39	-DB(P1)
6	+DB(0)	40	-DB(0)
7	+DB(1)	41	-DB(1)
8	+DB(2)	42	-DB(2)
9	+DB(3)	43	-DB(3)
10	+DB(4)	44	-DB(4)
11	+DB(5)	45	-DB(5)
12	+DB(6)	46	-DB(6)
13	+DB(7)	47	-DB(7)
14	+DB(P)	48	-DB(P)
15	GROUND	49	GROUND
16	DIFFSENS	50	GROUND
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	RESERVED	53	RESERVED
20	GROUND	54	GROUND
21	+ATN	55	-ATN
22	GROUND	56	GROUND
23	+BSY	57	-BSY
24	+ACK	58	-ACK
25	+RST	59	-RST
26	+MSG	60	-MSG
27	+SEL	61	-SEL
28	+C/D	62	-C/D
29	+REQ	63	-REQ
30	+I/O	64	-I/O
31	+DB(8)	65	-DB(8)
32	+DB(9)	66	-DB(9)
33	+DB(10)	67	-DB(10)
34	+DB(11)	68	-DB(11)

2-9 Installing Software Drivers

After all the hardware has been installed, you must install, first of all, the operating system, and then, the software drivers. The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CDROM drive, the display shown in Figure 2-5 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CDROM drive. Finally, double click on the S "Setup" icon.)
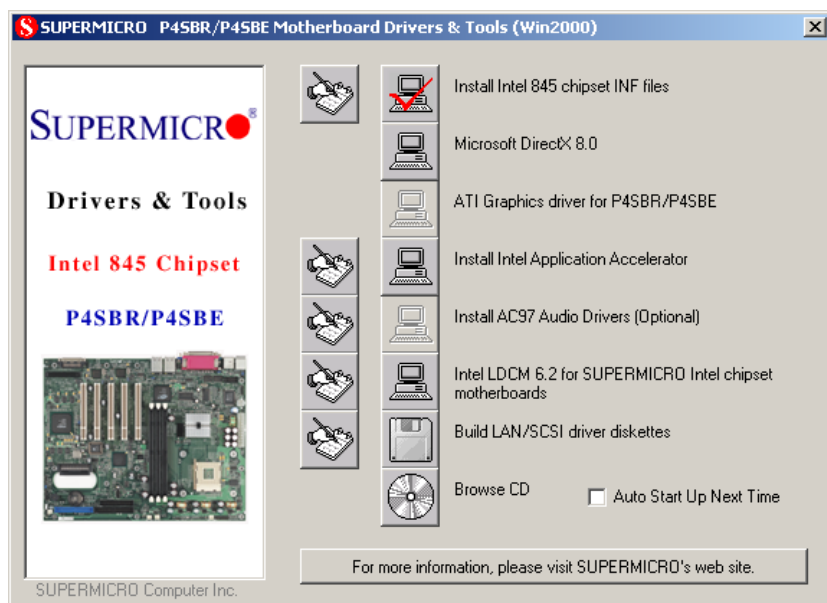
Figure 2-5. Driver/Tool Installation Display Screen

Click the icons showing a hand writing on paper to view the readme files for each item. Click the tabs to the right of these *in order from top to bottom* to install each item one at a time. **After installing each item, you must reboot the system before moving on to the next item on the list.** You should install everything here except for the SUPER Doctor utility, which is optional. The Security and Graphics Drivers support multiple languages. Click the arrows to pull down a menu of choices. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Note: The memory size reported in the device manager may be less than expected because some is used by the onboard graphics. Higher screen resolutions will take up more of this memory.